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ABSTRACT

Examined are the effects of motor skill development and impairment on the infant's and young child's overall functioning, and suggested are guidelines for assessing motor skills in multiply handicapped children. It is explained that motor delays and deficits limit a child's learning during critical developmental periods. Examples of delayed motor milestones in blind children are given. It is noted that assessment should cover such aspects as movement efficiency, splinter skills, and the kinds of motor activities the child finds most rewarding. (CL)

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ASSESSING MOTOR SKILLS IN MULTIPLY HANDICAPPED CHILDREN

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Assessing Motor Skills in

Multiply Handicapped Children

For just a moment I would like for those of you who are parents to reflect upon the early lives of your children. If you are not a parent, think about what you have been told about your early development. Do you know when first steps were taken? Can you remember when rolling over, sitting up and crawling first occurred? You may not remember the precise age at which these motor skills emerged, but parents and grandparents of infants are very much aware of when the infant should be acquiring these milestones, and for a while at least, these events are very important to them and they know the exact age at which their infant obtained these skills. Achieving motor milestones is an important accomplishment, not only in terms of acquired physical movement, but because movement skills play a critical role in the development of other facets of the child. The purpose of this paper is to portray the role of motor skills in the development of the total child, to show the effects impairments have on the development of motor skills, and to suggest guidelines for assessing motor skill achievement.

The Effects of Motor Skill Development on the Total Child

Piaget (1952) and many other cognitive psychologists have observed phenomena that suggest critical periods in the development of the child during which certain experiences must occur if they are to be effectively embedded into the organism's response repertoire. If this is true, then an impaired child, lacking efficient sensory and proprioceptive receptors will fail to learn perceptual, motor, cognitive and social tasks at the time when other parts of his body are ripe to assimilate those skills. This is not to say

impaired children will never acquire those skills, but it is to acknowledge the severity impairments have on the total development of a child.

The first 18 months of life constitute an important time for the development of a child's cognitive skills. During this period he is acquiring sensorimotor schemata upon which subsequent perceptual and conceptual reactions are built. In the first few months of life the child fixates on objects, tracks them and reaches to grasp them. He acts upon objects in predictable ways and learns to associate certain objects with certain motor schemas. Embedded in these early behaviors are understandings that lead to imitation, object concept, object permanence, causality and means-end relationships. Problem solving through trial and error movements later gives way to projected reasoning procedures allowing the child to problem solve by imagining motor movements without repeated trials. If impairments prevents the child from the early environmental motoric explorations that lead to these basic cognitive skills then the acquisition of these skills will be delayed.

Infant literature attests to the early ages at which infants begin distinguishing their mothers from others. He learns to identify her not only through seeing and hearing her, but through learning her movement patterns, how she holds him and what she usually does with him. Motor schemas are involved in the social interactions of playing pat-a-cake and peep-eye. Eckerman, Whatley & Kutz (1975) has reported that children as young as 10 months of age are already observing and copying the movements of peers. Further peer interactions emerge through motor skills as children learn to see-saw, swing and enter into other forms of co-active movement. At a later time, participation in group activities is possible through advancing motor

skills. The failure to acquire flexible motor schemas to facilitate the development of social exchange might lead to egocentricism and detachment from humans.

The Effects of Impairments on the Development of Motor Skills

When physical impairments exist, certain motor skills will fail to emerge normally. Depending on the amount of damage, and the extent to which it can be corrected, certain motor skills can be learned, but the quality of the skills may never reach the optimal level of performance.

Physical impairments effecting motor skills are not limited to muscle and structural anomalies. Blindness, a sensory impairment, has a tramatic effect upon the development of motor skills. Around two to three months of age a baby begins holding his head erect. He does this because he can visually fixate on and track objects in his environment. He gradually obtains the muscle strength in his neck to hold his head erect. He also notices that others also hold their heads erect. A blind baby will not acquire this skill at this age because the motivation (seeing objects and people) is not present (Fraiberg, 1968). Thus his head sags and will continue to do so even as he enters into full maturity unless efforts are made to prevent this behavior from occurring.

Rolling over, sitting, and standing skills emerge in blind children at about the same time as expected in nonimpaired children because these skills are developed in a position with the body gravity centered in a stable plane position. The effects of blindness on movement skills illustrates how delayed and inefficient movements occur in this population. Crawling emerges because the child sees a favorite toy and wants to retrieve it, or perhaps he

spies his mom and wants to go to her. He is motivated to move and he soon discovers he can move faster on all fours than sliding on his buttocks. Likewise walking and running develop because the child's body now has the strength, the coordination and the dynamic balance necessary for him to move on his two feet into space. The blind child's motor development pattern involving movement skills is likely to be very different. Parents frequently report to us that their blind child never crawled, but scooted on his buttocks. Unfortunately, the failure to crawl has lasting effects on walking and running skills that are built upon well developed crawling skills. It is easy to understand why this happens. The body can remain in a safe plane, and the hands can scan the floor surface with considerably less risk.

When walking skills do emerge in blind children they will show the effects of poor bilateral coordination. The child will probably walk some six to eight months after his sighted peers and his walk will reflect a weight shift from left to right with slight forward movements and a dragging of the feet. The arms will not swing in a coordinated pattern but will be used for balance. Running skills will show even more delay and abnormal effects due to the cumulative effects of delays in holding the head erect, crawling and walking.

Arm and hand manipulations are also effected by the lack of sight. The arms are slower in reaching out as nothing is seen to reach to grasp. The interaction of hands and fingers at midline is delayed as this motivation for investigation is missing. Hands tend to develop as singular units.

Blindness has been used to illustrate the effects of a sensory impairment on motor development. Children delayed in cognitive development were also found to be delayed in gross motor development (DuBose and Folio, 1975). The

possibility of motor delay in children with at least one identified handicap is considerable. If programs are to be implemented to effect changes in the child's behavior, then attention to his developing motor skills must be included.

Guidelines for Assessing Motor Skills

In young infants, motor skill assessment involves observations of reflex development as well as emerging movement patterns. An excellent guide to reflex development is Normal and Abnormal Development (Fiorentino, 1972). An extensive scale viewing both gross and fine motor sills in children is the Peabody Developmental Motor Scales and Programmed Activities (Folio and DuBose, 1974). This particular Scale allows the examiner to chart the acquisition of each motor skills from total dependence to independence. As children mature, the Frostig Movement Skills Battery (Orpet, 1972) and the Lincoln-Oseretsky Motor Development Scale (Sloan, 1955) are useful in examining motor skills. Identifying the skills in a child's motor repertoire is a first step in planning a motor program. Assessment must include far more information if appropriate intervention strategies are to be planned. By observing how accurately and smoothly the skill is performed, movement efficiency is noted. The timing and sequencing of motor tasks provides information on possible problem areas. Agility and flexibility can also be noted. Splinter skills, developmental gaps and overflow movements are frequently characteristic of children with learning disabilities. Attending, exploratory, grasping, manipulative, perseverative, closure and perceptual skills are only a few key points to note when observing fine motor skills. In the early years, a very

high correlation exists between manipulative skills and cognitive development. In severely retarded, multiply handicapped deaf-blind populations this positive correlation is maintained over a period of several years (Illingsworth, 1961; DuBose, 1976). This is not the case in children without obvious impairments.

In addition to knowing the skills the child has, and how efficient these skills are, it is important to know the kinds of motor activities the child finds most rewarding. If motor activities are in themselves high priority activities, then it is likely that the motor arena can be used to teach language, cognitive and social skills as well as motor skills. Viewing the relationship of motor skill development to the total child provides a qualitative assessment of the child and leads the way to an appropriate motor skill program.

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